Contr. Univ. Mich. Herb. 16:135–140. 1987.

SOME LATIN AMERICAN MOSSES NEW TO SCIENCE

Howard Crum
University of Michigan Herbarium
North University Building
Ann Arbor, Michigan 48109

In the course of four decades of intermittent involvement with the mosses of Latin America, I set aside a number of problem specimens, some of them long forgotten. A good number of them ceased to be problems as my knowledge and understanding increased, some exceeded the limits of my patience and were assigned names that would at least make them available for study by others, and a fair number, including those described below, seemed to merit description.

Leptotheca hamiltonii Crum, sp. nov. Figs. 1–7.

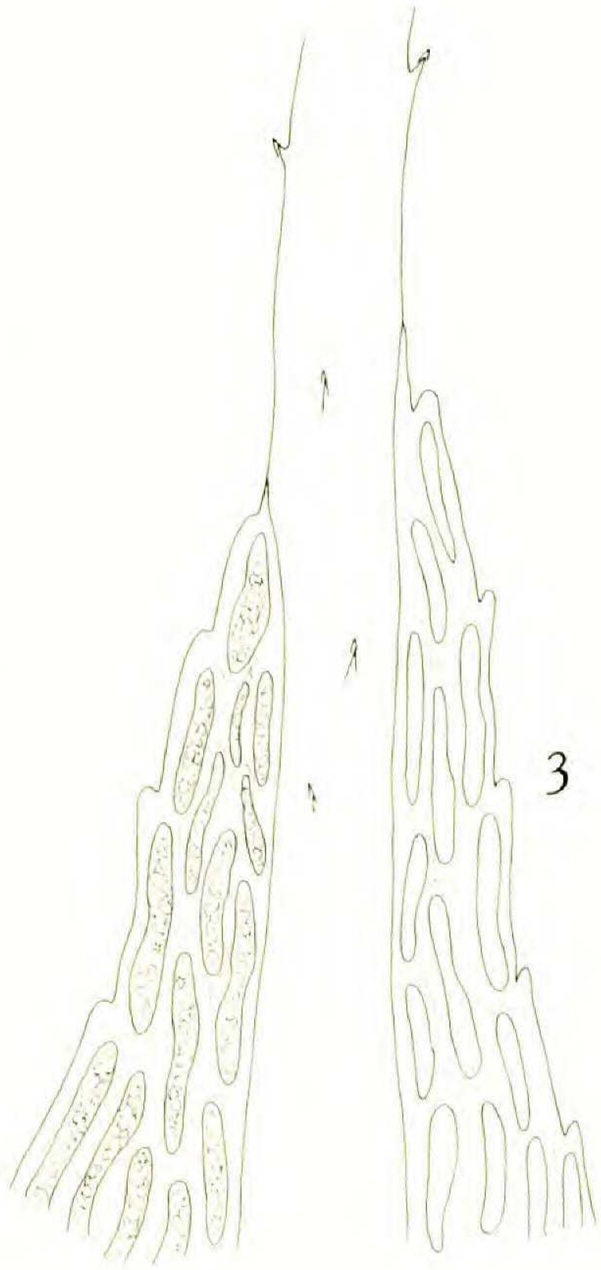
Plantae 4–5 cm altitudine, dense compactae, valde tomentosae, erectae, sparse furcatae. Folia laxe erecta, 2–3 mm longa, oblongo-lanceolata, acuta et aristata, basi decurrentia, marginibus inferne revolutis, superne serratis; costa excurrens, dorse teres, superne parve serrata; cellulae superiores breviter rhomboideae, 1–2:1, laeves, parietibus incrassatis, basilares oblongo-rhomboideae. Propagula in axillis foliorum superiorum aggregata, filamentosa, fusca vel subnigra.

Plants 4–5 cm high, compactly tufted, shiny yellow to greenish yellow, densely matted with a reddish tomentum below. Stems erect, sparsely and irregularly branched. Leaves loosely erect or erect-spreading when dry, somewhat more spreading at stem and branch tips, erect when moist, moderately concave, 2–3 mm long, oblong-lanceolate, decurrent, acute, ending in a short, ± stout, yellow-green, sparsely serrulate awn; margins recurved in the lower half or more, serrulate above the middle, serrate near the apex; costa excurrent, prominent at back, sparsely serrulate-toothed above; upper cells irregularly rhombic to oblong-rhombic, ca. 1–2:1, thick-walled, smooth, those of the spreading upper leaves oblong-linear, flexuose, gradually longer below, the basal cells oblong-rhomboidal, somewhat shorter at the margins or, in upper leaves, all basal cells sublinear. Inflorescences and sporophytes unknown. Dark brown or blackish, smooth or faintly papillose brood filaments 9–13 cells long produced abundantly on short, branched stalks in axils of upper leaves.

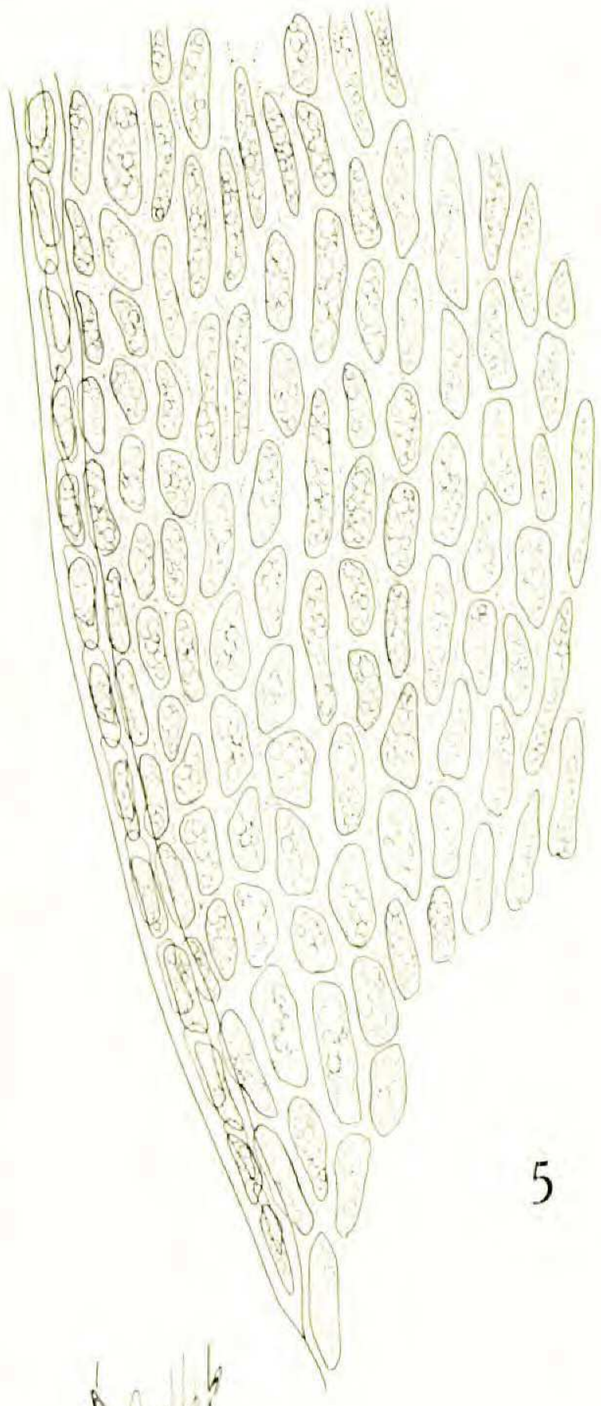
Type: Peru. Depto. San Martín, Dist. Pataz, valley of Río Apisoncho, ca. 30 km E of Parcoy, on damp, shaded, rotting branch just above ground, subalpine forest, 1 Aug–15 Sep 1965, *A. C. Hamilton & P. M. Holligan 42* (holotype: MICH). The specimen was collected on the Cambridge Botanical Expedition to North Peru.

The species of *Leptotheca* are all similar in overall appearance and leaf structure. This new species from Peru is quite large as compared with the others, and it is particularly distinctive because of its growth in dense clods compacted by a heavy growth of reddish tomentum in the lower half or more. It much resembles a

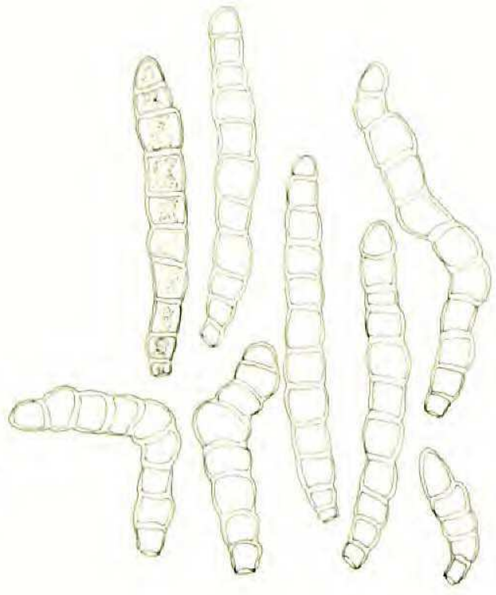
1



3

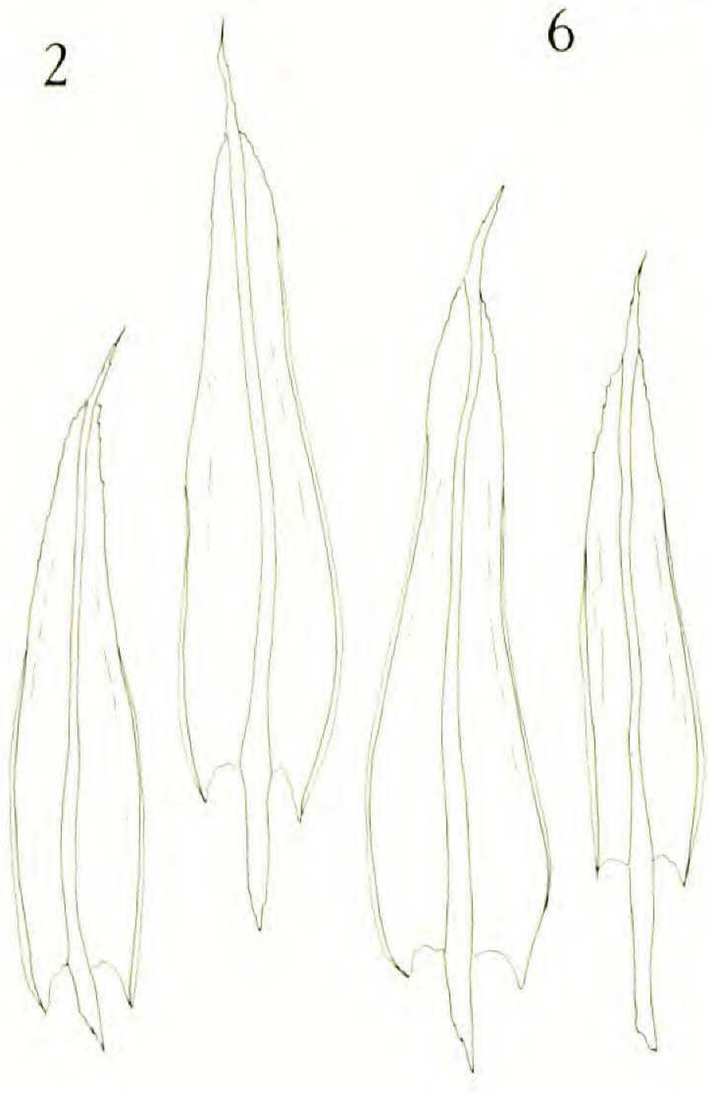


5



6

4



2

7

FIGS. 1–7. *Leptotheca hamiltonii*. 1. Habit, ×2. 2. Leaves, ×16. 3, 4. Cells at leaf apex, ×290. 5. Alar cells, ×290. 6. Brood filaments, ×76. 7. Branch stalk of clustered brood filaments, ×290.

species of *Campylopus* because of its robust stature and considerable development of tomentum. The majority of the leaves are erect and not much incurved or otherwise contorted when dry, and the leaf cells are rhombic or oblong-rhombic, but those at the stem tips are somewhat spreading and have longer cells. The upper leaves commonly subtend dense clusters of dark brown or even blackish brood filaments. The costa ends as a sparsely serrulate awn, and the leaf margins are revolute below and moderately serrate above. In most respects the species is like *L. costaricensis* Card. & Thér. (known from Jamaica, Colombia, and Costa Rica). However, that species is considerably smaller and less tomentose, and its leaves are narrower and more slender-pointed, with the costa strongly toothed at back above and on the awns. Its upper leaves have cells less markedly elongate, and its brood filaments are more distinctly papillose. *Leptotheca boliviana* Herz. differs in much the same ways, but its leaves are erect-incurved when dry, and its brood filaments are shorter and elongate-clavate. *Leptotheca gaudichaudii* (Spreng.) Schwaegr. (of Tierra del Fuego, South Georgia, New Zealand, Australia, and South Africa) has leaf margins usually plane, cells subquadrate throughout, awns stout and entire, and brood filaments sometimes much longer (as many as 30 cells in length). I have no knowledge of *L. wattii* Card. & Thér.

Churchill and Buck (1982) have made *L. costaricensis* a synonym of *L. boliviana*. They recognized *L. gaudichaudii* var. *wattii* but noted that the known specimens are mixtures with the var. *gaudichaudii*.

Breutelia maegdefraui Crum, nom. nov. *Breutelia rhytidioides* Crum ex Mägdefrau, Nova Hedwigia 38: 58. 1983, non *B. rhythidioides* Herz., 1934.

I am indebted to Marshall Crosby for calling my attention to a previous homonym (of a slightly different spelling).

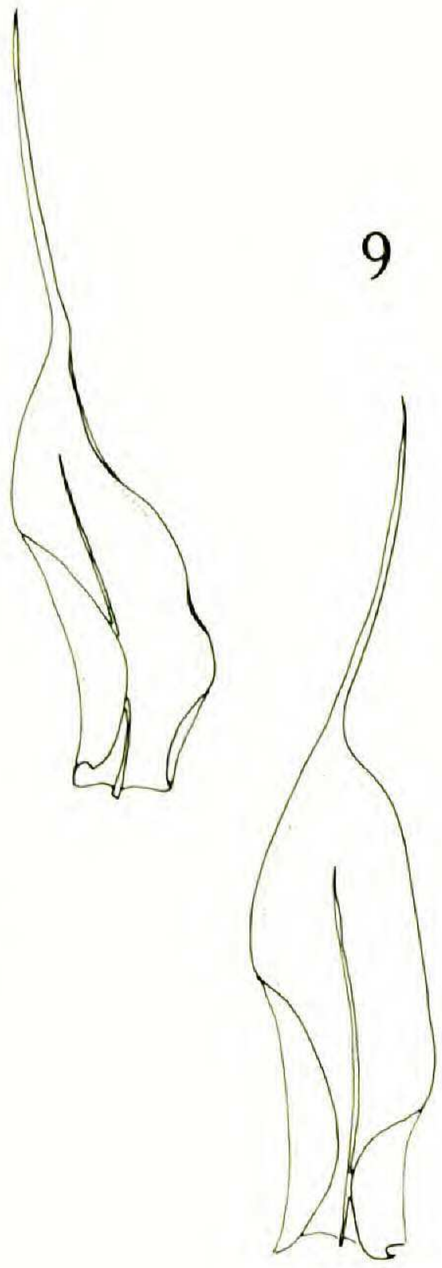
Spiridentopsis longissima (Raddi) Broth. Figs. 8–12.

Robust plants in loose, moderately shiny, yellow-brown, pendent masses. Stems flexuose, distantly subpinnate. Branches horizontal, subequal. Stem and branch leaves similar, squarrose-spreading, about 5–6 mm long, abruptly narrowed to a long, flat subula (about 3 mm long) from an oblong-ovate, concave base, cordate at the insertion; margins erect, finely serrulate for a short distance below the base of the acumen; costa slender, single, ending about ⅔ up the leaf; upper cells linear-rhomboidal, relatively thin-walled and moderately porose; cells of leaf base larger, thick-walled, strongly pitted, and golden-yellow across the insertion, those at the basal angles short and irregular with thick, strongly pitted walls, those at the middle of the insertion rather shortly rhomboidal. Apparently dioicous; perichaetia small.

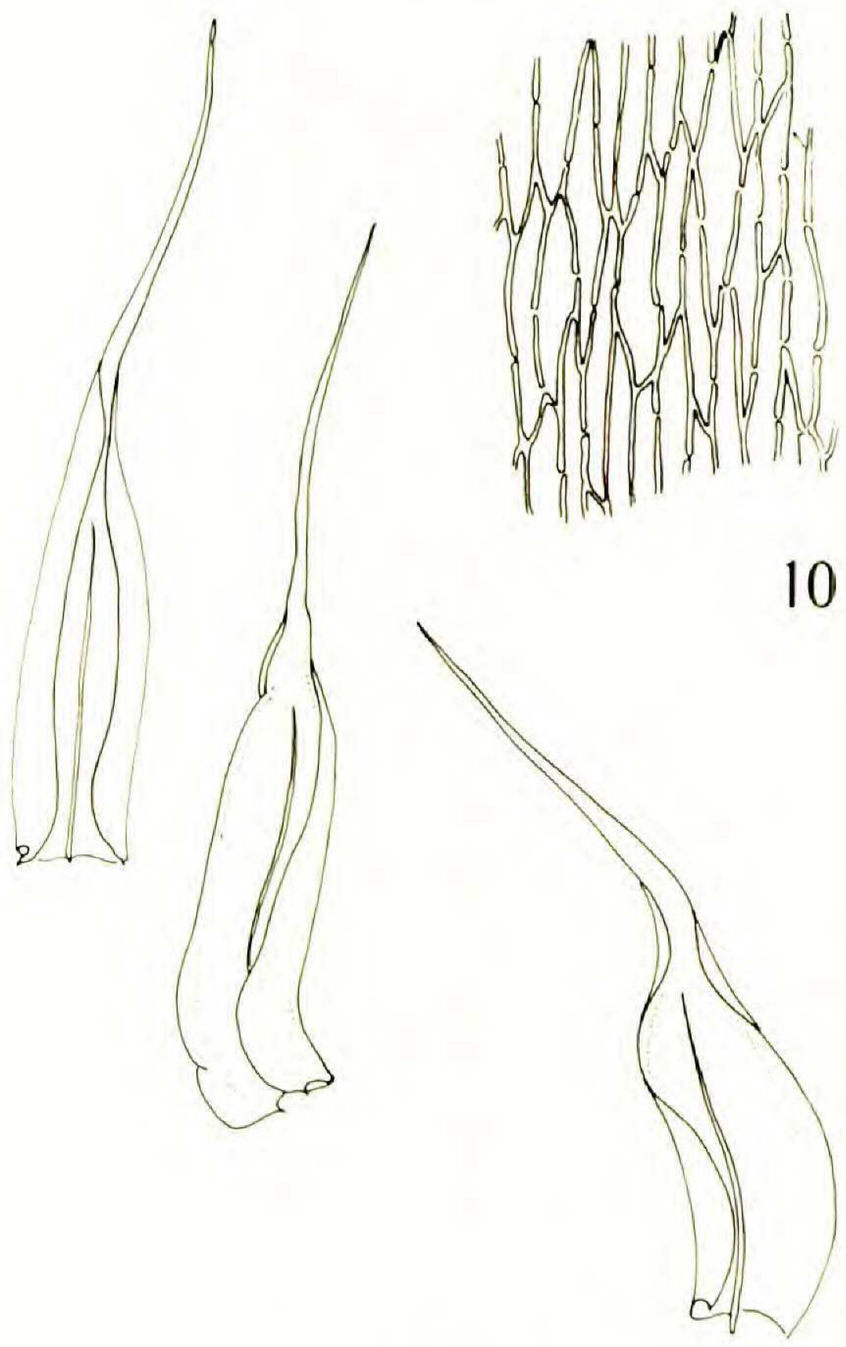
Brazil. Paraná: Mun. São José dos Pinhais, road to Guaricana, low area where the electricity wires come near the road, ca. 25°40′S, 49°W, evergreen forest, often misty or rainy, ca. 900–1000 m, hanging, 1 Nov 1977, *L. R. Landrum 2328* (MICH; NY).

The plants are quite similar in appearance to a *Zelometeorium* because of short, spreading branches and conspicuously squarrose leaves. They differ significantly, however, in having long-subulate leaf points and porose cells, with those in the alar regions noticeably differentiated in shape and color. I had planned to describe this collection as a new genus and species, perhaps because I had not sufficiently considered a relationship with the Pterobryaceae. The differences be-

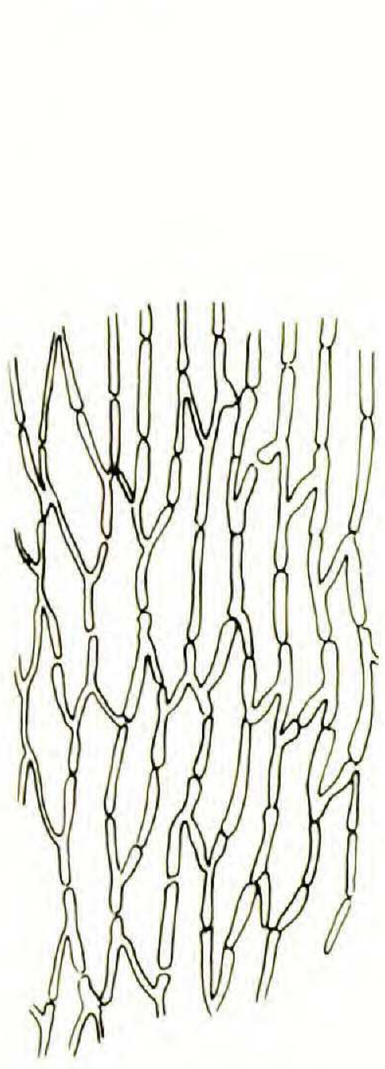
8



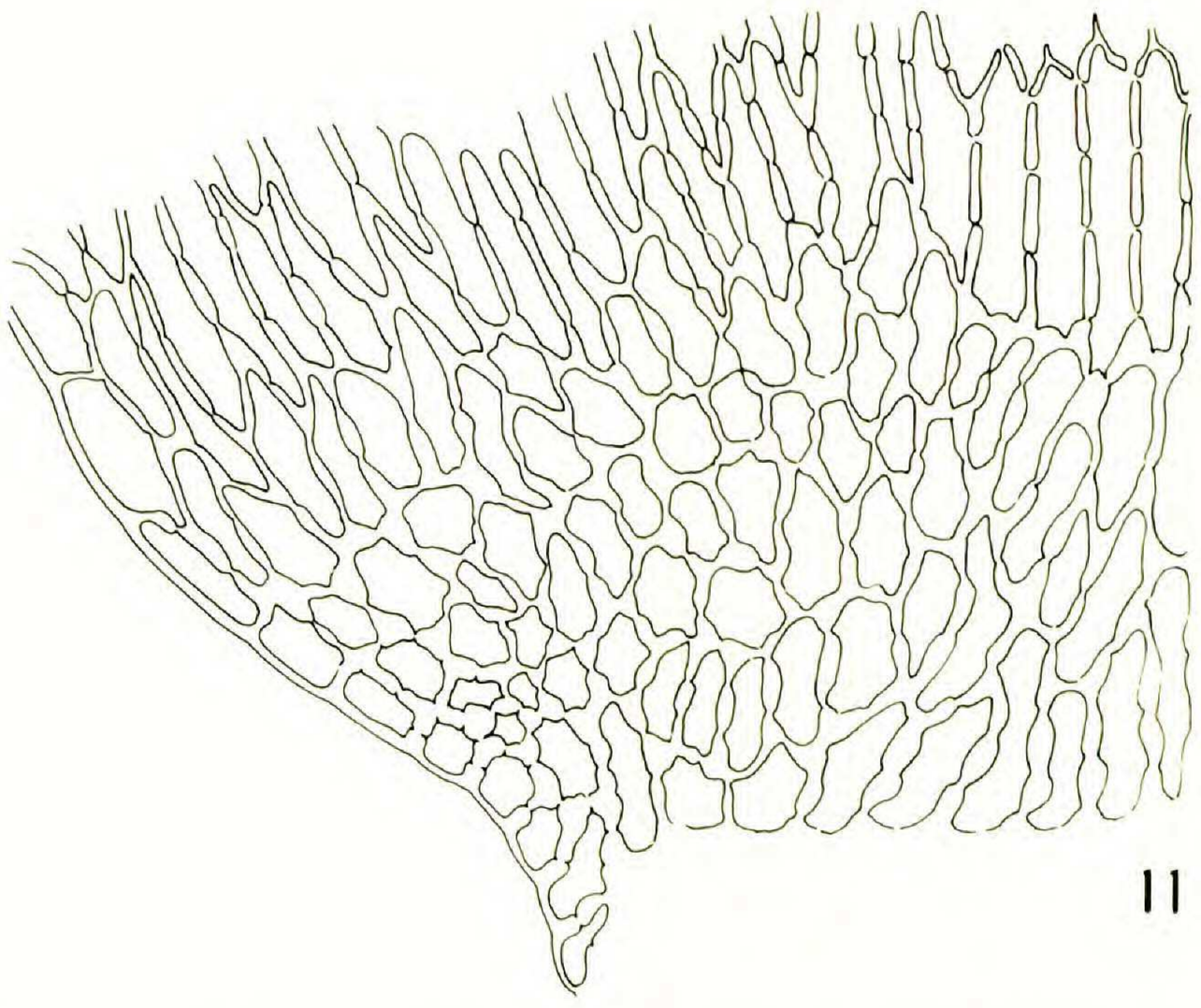
9



10



12



11

FIGS. 8–12. *Spiridentopsis longissima.* 8. Habit, ×1. 9. Leaves, ×6. 10. Upper median cells, ×290. 11. Alar cells, ×290. 12. Cells of upper portion of leaf base, ×290.

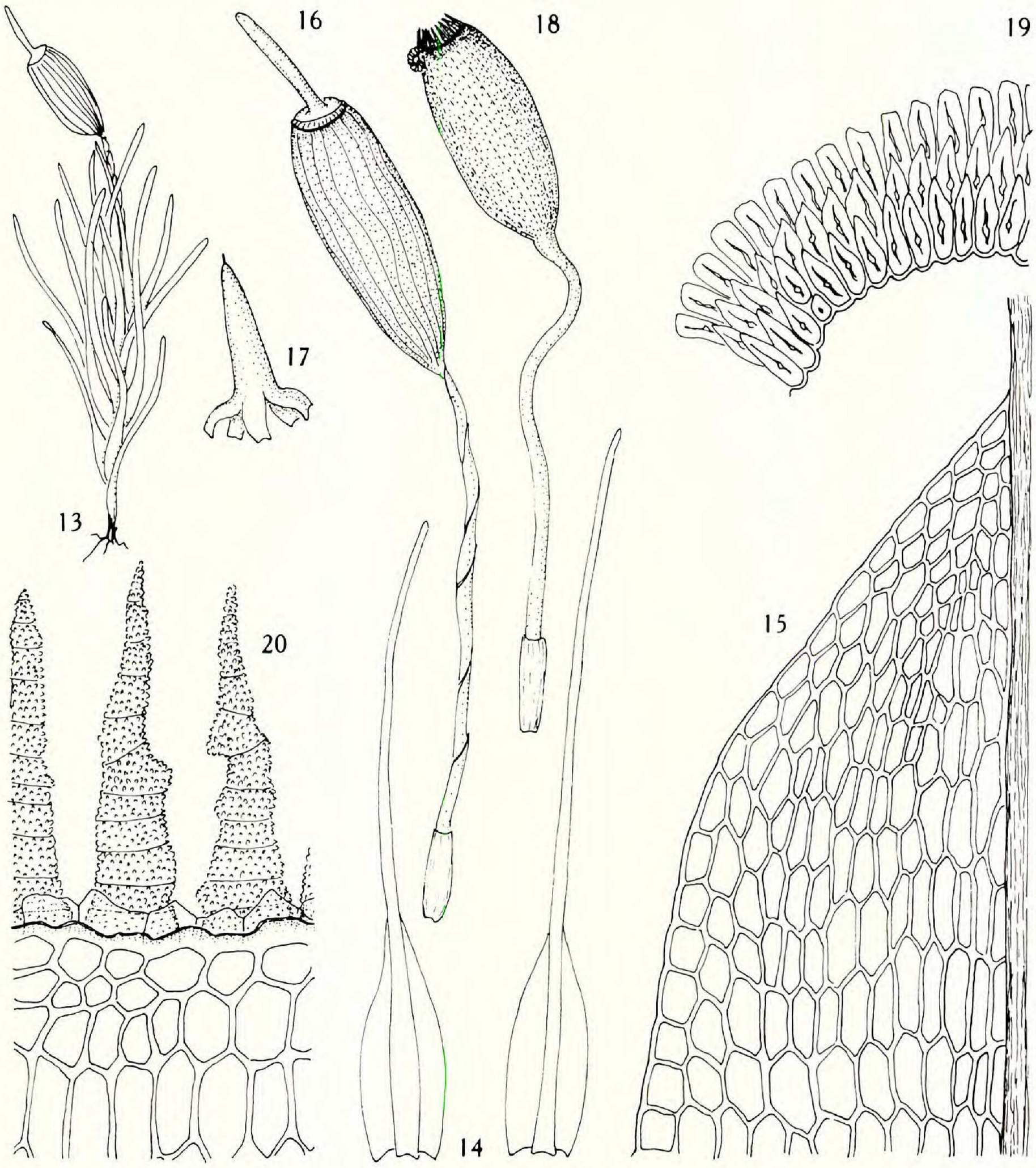
tween that family and the Meteoraceae are indeed unconvincing, but a pendent habit of growth may argue for a more reasonable placement in the latter. I am grateful to my friend William Buck for helping me to see my mistake before I made it!

The rarity of the species can be judged by the fact that only two collections are to be seen, otherwise, in the herbarium, both from Serra do Mar, Paraná, both sterile. Brotherus, in *Die natürlichen Pflanzenfamilien* (1925), described the sporophyte but said he had not seen an example.

Brachydontium curvisetum Crum, sp. nov. Figs. 13–20.

Plantae pusillae, dense caespitosae, usque ad 5 mm altitudine, saepe furcatae. Folia sicca erecto-flexuosa, madida erecta vel plus minusve patentia, 1.5–3 mm longa, subulata e basi oblongo-ovato, marginibus planis integrisque; costa totum subulae occupans; cellulae basis folii oblongae, superne breviter rhomboideae vel subquadratae. Dioicum. Setae siccae valde torquatae et erecto-flexuosae, madidae valde curvatae; capsulae exsertae, oblongo-cylindricae, 1 mm longae, 16-plicatae, magne annulatae, operculo subulato, dentibus peristomii 16, albidis, grosse papillosis. Sporae 8–10 μm, sublaeves. Calyptrae mitratae, lobis 5, patentibus.

Plants small and slender, in dense, dull, yellow tufts. Stems 2–5 mm high, erect-flexuose, simple or forked by repeated innovations, radiculose only at base. Leaves erect to ± spreading when moist, erect-flexuose when dry, about 1.5 mm



FIGS. 13–20. *Brachydontium curvisetum*. 13. Plant, ×15. 14. Leaves, ×32. 15. Cells at leaf shoulders, ×300. 16. Dry sporophytes, ×35. 17. Calyptra, ×35. 18. Moist sporophyte, ×35. 19. Portion of annulus, ×300. 30. Portion of peristome, ×300.

long below, progressively longer and more crowded upward, as much as 3 mm long, long-subulate from an oblong-ovate base, the subula terete, smooth; margins plane and entire; costa narrow, completely filling the subula; cells of the lamina smooth, moderately thick-walled, irregularly rhombic to subquadrate toward the shoulders, larger and oblong below, not differentiated in the alar regions. Dioicous; male plants mingled with the female, similar but shorter (about 2, sometimes 3 mm high), simple or forked (as many as 3 successive perigonia were seen); perichaetial leaves similar to upper stem leaves. Setae 2–3 mm long, strongly twisted and erect-flexuose to ± cygneous when dry, strongly cygneous-curved when moist, yellow, smooth; capsules shortly exserted, 1 m long, oblong-cylindric, without a neck, evenly 16-plicate moist or dry, yellow-brown or tan; annulus broad, revoluble; operculum erect, slenderly long-rostrate from a convex base, about 0.7 mm long; exothecial cells moderately firm-walled, irregularly elongate-hexagonal, somewhat darker yellow in bands corresponding to the ribs, those in 1–2 suboral rows smaller and irregularly hexagonal; stomata very few, small, at junction of urn and seta; peristome teeth inserted near the mouth, erect when moist, recurved when dry, 16, lanceolate, tapered to a narrow apex, consisting of 2 layers of thickenings, white, coarsely papillose, about 125 μm high, distinctly exceeding the annulus, with a pale, smooth, delicate irregularly dissected low membrane, up to about 35 μm high, external to the base of the teeth. Spores subspherical, 8–10 μm, smooth or nearly so. Calyptrae mitrate, about 1 mm long, longer than the operculum but with 5 abruptly spreading lobes near the junction of urn and operculum, smooth, naked.

TYPE: MEXICO. Oaxaca: along road N of Llano de las Flores, N of Oaxaca, on rock, 2000–2500 m, 25 Dec 1965, *Z. Iwatsuki & A. J. Sharp 5340* (holotype: TENN; isotype: MICH).

In both gametophytic and sporophytic characteristics, this species is similar to *Brachydontium trichodes* (Web.) Milde, which is rare and scattered at temperate latitudes. It is larger in all its dimensions. More significantly, and more tangibly, it differs in having dioicous inflorescences, cygneous setae, and tapered peristome teeth that clearly exceed the broad annulus. Presumably the low membrane external to the peristome teeth represents the exostome. Although generally placed near the Dicranaceae and the Ditrichaceae, *Brachydontium* and other members of the Seligeriaceae seem to belong to a double-peristome relationship. Only recently has the family been shifted to a separate order, just as the Encalyptaceae, for similar reasons, have been given ordinal recognition.

The generic definition of *Brachydontium* needs to be expanded in order to accomodate the dioicous sexuality and strongly curved setae of this Mexican species.

LITERATURE CITED

Brotherus, V. F. 1925. Musci. In *Die natürlichen Pflanzenfamilien*, 2d ed., vol. 11, eds. A. Engler & K. Prantl. Leipzig: Wilhelm Engelmann.

Churchill, S. P., & W. R. Buck. 1982. A taxonomic investigation of *Leptotheca* (Rhizogoniaceae). Brittonia 34: 1–11.